AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application. Please amend claims 1-17, 29, 30, 33, 36, 38 and 42 in the following manner.

1. (Currently Amended) A method of managing failures for use in a process control system having a unit module and a plurality of control modules communicatively coupled to the unit module that carry out a process, the method comprising ~~the steps of~~:

collecting failure information within each of the control modules;

generating a composite failure code within each of the control modules based on the failure information within each control module;

automatically sending a group of composite failure codes to the unit module; and

determining whether the process should be stopped based on the group of composite failure codes.

2. (Currently Amended) The method of claim 1, wherein ~~the step of~~ collecting failure information within each of the control modules includes ~~the step of~~ generating a list of failures within each of the control modules.

3. (Currently Amended) The method of claim 2, wherein ~~the step of~~ generating the list of failures includes ~~the step of~~ storing failure information associated with one or more of a control loop, sensor and actuator that carry out actions for the control modules.

4. (Currently Amended) The method of claim 1, wherein ~~the step of~~ generating the composite failure code within each of the control modules based on the failure information within each control module includes ~~the step of~~ mathematically combining the failure information within each control module.

5. (Currently Amended) The method of claim 4, wherein ~~the step of~~ mathematically combining the failure information includes ~~the step of~~ calculating a weighted sum using the failure information.

6. (Currently Amended) The method of claim 1, wherein ~~the step of~~ automatically sending the group of composite failure codes to the unit module includes ~~the step of~~ selecting the group of composite failure codes based on a phase of the unit module.

7. (Currently Amended) The method of claim 6, wherein ~~the step of~~ selecting the group of composite failure codes based on the phase of the unit module includes ~~the step of~~ selecting the group of composite failure codes based on a current phase of the unit module.

8. (Currently Amended) The method of claim 6, wherein ~~the step of the step of~~ selecting the group of composite failure codes based on the current phase of the unit module includes the step of selecting a composite failure code associated with a non-subservient control module.

9. (Currently Amended) The method of claim 8, wherein ~~the step of~~ selecting the composite failure code associated with the non-subservient control module includes ~~the step of~~ selecting a failure code based on an explicit request to include the non-subservient module in the current phase of the unit module.

10. (Currently Amended) The method of claim 1, wherein ~~the step of~~ determining whether the process should be stopped based on the group of composite failure codes includes ~~the steps of~~ selecting one composite failure code from the group of composite failure codes and comparing the one selected composite failure code to a first predetermined threshold value associated with a determination of whether the process should be stopped.

11. (Currently Amended The method of claim 10, further comprising ~~the step of~~ comparing the one selected composite failure code to a second predetermined threshold value associated with a determination that the process should continue.

12. (Currently Amended) The method of claim 10, wherein ~~the step of~~ selecting the one composite failure code from the group of composite failure codes includes ~~the step of~~ selecting a worst composite failure code.

13. (Currently Amended) The method of claim 12, wherein ~~the step of~~ selecting the worst composite failure code includes ~~the step of~~ selecting a composite failure code having the highest numerical value.

14. (Currently Amended) A method of managing failures for use in a process control system having a unit module and a control module communicatively coupled to the unit module that carry out a process, the method comprising ~~the steps of~~:

collecting failure information within the control module;

generating a composite failure code within the control module based on the failure information within the control module;

automatically sending the composite failure code to the unit module; and

determining whether the process should be stopped based on the composite failure code.

15. (Currently Amended) The method of claim 14, wherein ~~the step of~~ generating the composite failure code within the control module based on the failure information within the control module includes ~~the step of~~ mathematically combining the failure information within the control module.

16. (Currently Amended) The method of claim 15, wherein ~~the step of~~ mathematically combining the failure information includes ~~the step of~~ calculating a weighted sum using the failure information.

17. (Currently Amended) The method of claim 14, wherein ~~the step of~~ determining whether the process should be stopped based on the composite failure code includes ~~the step of~~ comparing the composite failure code to a predetermined threshold value.

18. (Original) A system that manages failures for use with a process control system having a processor and a unit module and a plurality of control modules communicatively coupled to the unit module, the system comprising:

a computer readable medium;

a first routine stored on the computer readable medium and adapted to be executed by the processor that collects failure information within each of the control modules;

a second routine stored on the computer readable medium and adapted to be executed by the process that generates a composite failure code within each of the control modules based on the failure information within each control module;

a third routine stored on the computer readable medium and adapted to be executed by the processor that automatically sends a group of composite failure codes to the unit module; and

a fourth routine stored on the computer readable medium and adapted to be executed by the processor that determines whether the process should be stopped based on the group of composite failure codes.

19. (Original) The system of claim 18, wherein the first routine is further adapted to generate a list of failures within each of the control modules.

20. (Original) The system of claim 19, wherein the first routine is further adapted to store failure information associated with one or more of a control loop, sensor and actuator that carry out actions for the control modules.

21. (Original) The system of claim 18, wherein the second routine is further adapted to mathematically combine the failure information within each of the control modules.

22. (Original) The system of claim 21, wherein the second routine is further adapted to calculate a weighted sum using the failure information.

23. (Original) The system of claim 18, wherein the third routine is further adapted to select the group of composite failure codes based on a phase of the unit module.

24. (Original) The system of claim 23, wherein the third routine is further adapted to select the group of composite failure codes based on a current phase of the unit module.

25. (Original) The system of claim 18, wherein the fourth routine is further adapted to select one composite failure code from the group of composite failure codes and compare the one composite failure code to a first predetermined threshold value associated with a determination of whether the process should be stopped.

26. (Original) The system of claim 25, wherein the fourth routine is further adapted to compare the one composite failure code to a second predetermined threshold value associated with a determination that the process should continue.

27. (Original) The system of claim 25, wherein the fourth routine is further adapted to select a worst composite failure code from the group of composite failure codes.

28. (Original) The system of claim 27, wherein the fourth routine is further adapted to select a composite failure code having the highest numerical value to be the worst composite failure code.

29. (Currently Amended) A device that manages failures for use in a process control system having a unit module and a plurality of control modules communicatively coupled to the unit module that carry out a process, the device comprising:

a controller having a memory and a processor communicatively coupled to the memory, wherein the controller is programmed to use composite failure codes to determine whether the process should be stopped and wherein the composite failure codes are developed from information associated with two or more errors.

30. (Currently Amended) A ~~The~~ device ~~of claim 29,~~ that manages failures for use in a process control system having a unit module and a plurality of control modules communicatively coupled to the unit module that carry out a process, the device comprising:

a controller having a memory and a processor communicatively coupled to the memory,wherein the controller is programmed to use composite failure codes to determine whether the process should be stopped; and

wherein the controller is further programmed to determine whether the process should be stopped based on composite failure codes that are associated with ones of the control modules that are currently needed by the unit module to carry out the process.

31. (Original) The device of claim 30, wherein the controller is further programmed to select one of the composite failure codes and to compare the one selected composite failure code to a predetermined threshold value to determine whether the process should be stopped.

32. (Original) The device of claim 31, wherein the controller is further programmed to select a worst composite failure code to be the one selected composite failure code.

33. (Currently Amended) A process control system for carrying out a process, the process control system comprising:

a plurality of field devices;

a controller communicatively coupled to the plurality of field devices and including a unit module that carries out at least a portion of the process, wherein the unit module causes the controller to process a group of composite failure codes to determine whether the process should be stopped, and wherein the composite failure codes are developed from information associated with two or more errors.

34. (Original) The process control system of claim 33, wherein the group of composite failure codes is generated by a plurality of control modules.

35. (Original) The process control system of claim 34, wherein the plurality of control modules are instantiated within the plurality of field devices.

36. (Currently Amended) A ~~The~~ process ~~of claim 34,~~ control system for carrying out a process, the process control system comprising:

a plurality of field devices;

a controller communicatively coupled to the plurality of field devices and including a unit module that carries out at least a portion of the process, wherein the unit module causes the controller to process a group of composite failure codes to determine whether the process should be stopped;

wherein the group of composite failure codes is generated by a plurality of control modules, and wherein the plurality of control modules are instantiated within the controller.

37. (Original) The process control system of claim 34, wherein each of the control modules uses a list of failures to generate its respective composite failure code.

38. (Currently Amended) A ~~The~~ process control system ~~of claim 37,~~ for carrying out a process, the process control system comprising:

a plurality of field devices;

a controller communicatively coupled to the plurality of field devices and including a unit module that carries out at least a portion of the process, wherein the unit module causes the controller to process a group of composite failure codes to determine whether the process should be stopped;

wherein the group of composite failure codes is generated by a plurality of control modules, and wherein the list of failures includes numerical values associated with one or more failures and wherein each of the field devices mathematically combines the numerical values within its respective list of failures to generate its respective failure code.

39. (Original) The process control system of claim 38, wherein each of the control modules mathematically combines the numerical values within its respective list of failures by calculating a weighted sum of the numerical values.

40. (Original) The process control system of claim 33, wherein the unit module causes the controller to select the group of the composite failure codes based on a current phase of the process.

41. (Original) The process control system of claim 33, wherein each of the control modules automatically sends its respective composite failure code to the controller.

42. (Currently Amended) A ~~The~~ process control system ~~of claim 33,~~ for carrying out a process, the process control system comprising:

a plurality of field devices;

a controller communicatively coupled to the plurality of field devices and including a unit module that carries out at least a portion of the process, wherein the unit module causes the controller to process a group of composite failure codes to determine whether the process should be stopped; and

wherein the controller processes the group of the composite failure codes by selecting a worst failure code from the group of the composite failure codes and comparing the worst failure code to a predetermined threshold associated with a determination of whether the process should be stopped.

43. (Original) The process control system of claim 42, wherein the controller selects a failure code having the highest numerical value from the group of the composite failure codes to be the worst failure code.